

Notice of Allowability

Application No.

09/973,057

Examiner

VanThu Nguyen

Applicant(s)

IKEDA, TAKASHI

Art Unit

2824

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to RCE and amendment filed on 06/09/2004.
2. ☒ The allowed claim(s) is/are 1-9, 12 and 16.
3. ☒ The drawings filed on 10 October 2001 are accepted by the Examiner.
4. ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) ☒ All b) ☐ Some* c) ☐ None of the:
 1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____.


Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.
THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

5. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
6. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
 - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
 - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
 - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.

Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
7. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☐ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3. ☒ Information Disclosure Statements (PTO-1449 or PTO/SB/08),
Paper No./Mail Date 06/09/04
4. ☐ Examiner's Comment Regarding Requirement for Deposit
of Biological Material
5. ☐ Notice of Informal Patent Application (PTO-152)
6. ☐ Interview Summary (PTO-413),
Paper No./Mail Date _____
7. ☒ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other _____


VanThu Nguyen
Primary Examiner
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EXAMINER'S AMENDMENT

1. An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

The application has been amended as follows:

Replace claim 12 with:

--A MRAM comprising a plurality of magnetoresistive films on a substrate, each of said magnetoresistive films in which at least a first magnetic layer, a second magnetic layer, a nonmagnetic layer, a third magnetic layer, and a fourth magnetic layer are stacked in the order named,

wherein at least said first magnetic layer comprises Gd and said fourth magnetic layer comprises at least one of Tb or Dy,

wherein each of said first magnetic layer and fourth magnetic layer has an easy axis of magnetization along a perpendicular direction to a film plane, and the second magnetic layer and the third magnetic layer have a greater spin polarization than the first magnetic layer and the fourth magnetic layer, and

wherein said second and third magnetic layers are magnetic layers comprising at least Co and Co contents thereof are not less than 20 at.% nor more than 90 at.%.--

Allowable Subject Matter

2. Claims 1-9, 12, 16 are allowed.

The following is an examiner's statement of reasons for allowance:

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The prior art made of record and considered pertinent to the applicant's disclosure does not teach or suggest the claimed limitations. Mao et al., Hayashi et al., and Chen et al., taken individually or in combination, do not teach the claimed invention having the following limitations:

wherein at least said first magnetic layer comprises Gd and said fourth magnetic layer comprises Tb or Dy; and wherein each of said first magnetic layer and fourth magnetic layers has an easy axis of magnetization along a perpendicular direction to a film plane, and a second magnetic layer and the third magnetic layer have a greater spin polarization than the first magnetic layer and the fourth magnetic layer; or

wherein each of said first magnetic layer and fourth magnetic layers has an easy axis of magnetization along a perpendicular direction to a film plane, and a second magnetic layer and the third magnetic layer have a greater spin polarization than the first magnetic layer and the fourth magnetic layer; and wherein said second and third magnetic layers are magnetic layers comprising at least Co and the Co contents thereof are not less than 20 at. % nor more than 90 at. %.

Conclusion

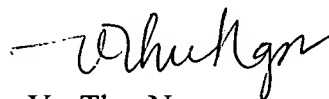
3. Any inquiry concerning this communication or earlier communications from the examiner should be directed to VanThu Nguyen whose telephone number is (571) 272-1881. The examiner can normally be reached on Monday-Friday, 8:00am-4:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Richard Elms can be reached on (571) 272-1869. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

December 10, 2004



VanThu Nguyen
Primary Examiner
Art Unit 2824